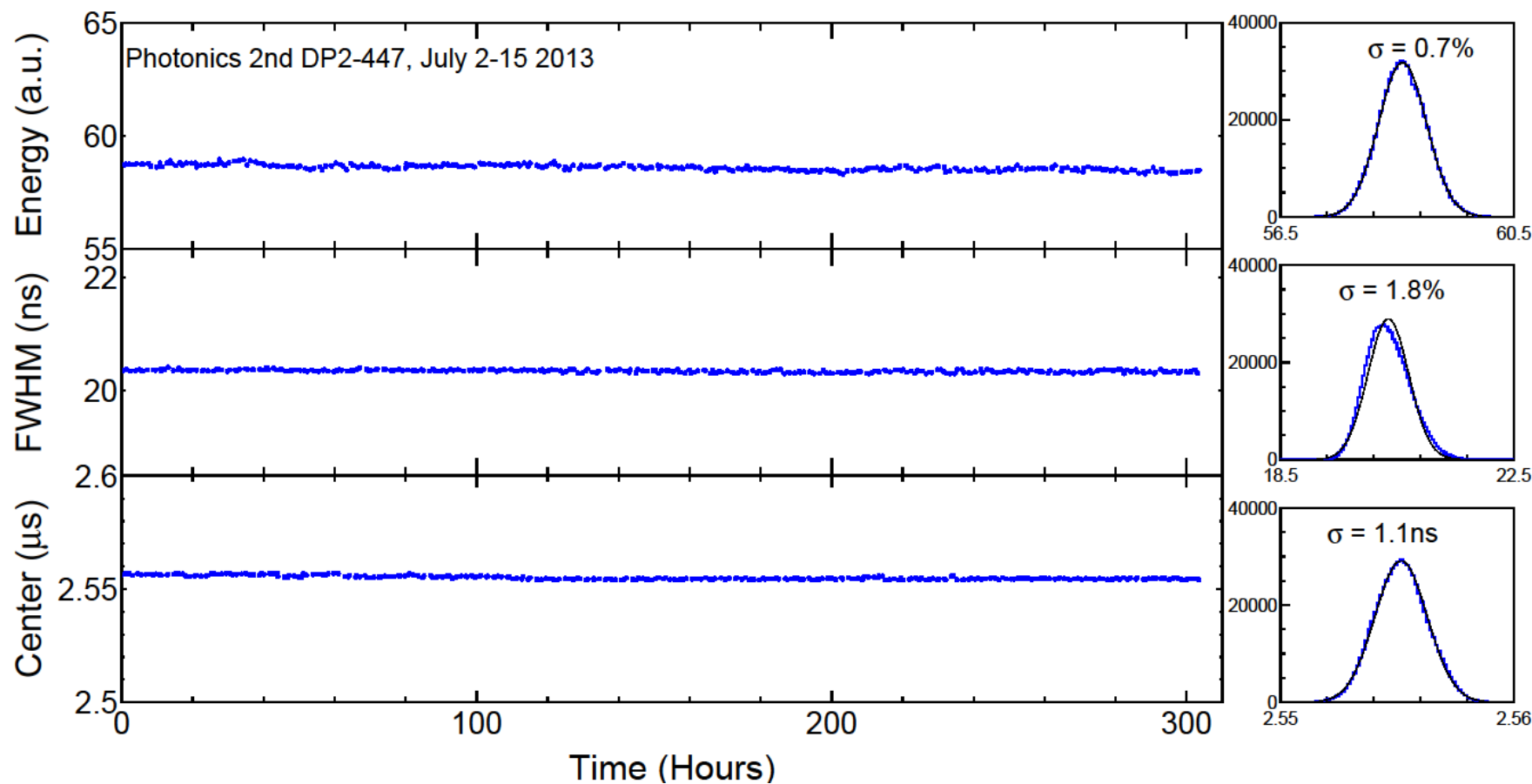


# Update on the 1<sup>st</sup> Photonics DP2-447 (s/n 11-381)

- ❑ On June 27, 2013, Photonics found **“the desiccator insert was apparently in contact with the end mirror mount detuning the cavity. The mirror mount has slotted mounting holes and was translated a couple of millimeters to provide clearance.”**
- ❑ On July 8, 2013, Photonics found that during a 24 hr “long term” QC test the laser power was stabilized at a level of about 10% lower, so hold off the shipment to CERN.
- ❑ On July 12, Photonics found **“This 10% decrease was correlated to the relative humidity (RH) inside the laser head.”** Photonics also reported that the optimal RH is about  $(30 \pm 5)\%$  in terms of output power. A similar test for the 2<sup>nd</sup> DP2 (12-658) was carried out at Caltech on July 17.
- ❑ On July 19, a quotation about adding RH sensor in two DP2 laser heads at \$3,700 was received.

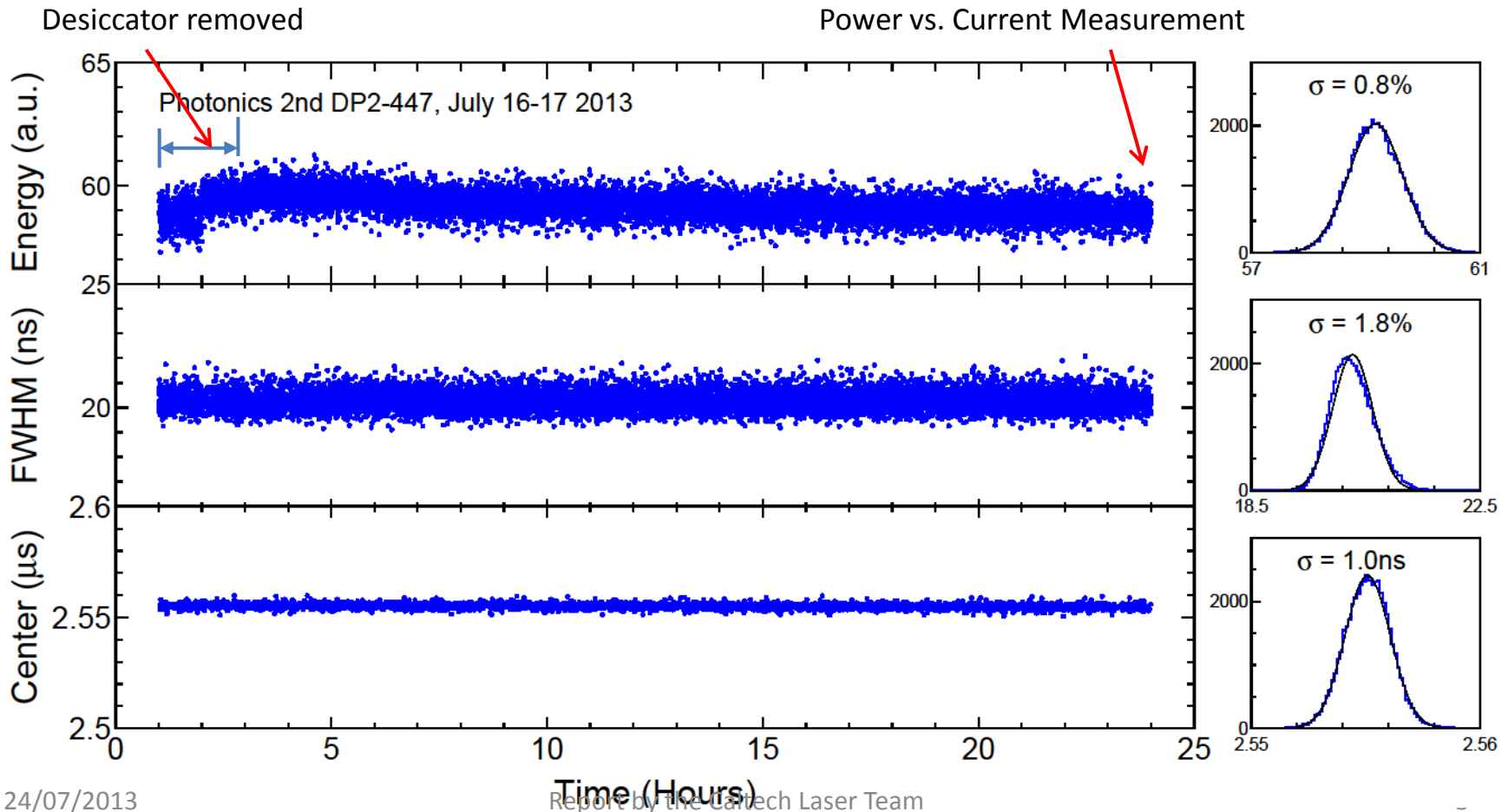
# Stability of the 2<sup>nd</sup> DP2 (s/n:12-658) for >300 h

After adjusting the trigger setting, a long term test of 130 h shows stabilities (rms) of 0.7%/2%/1.6 ns for pulse energy/FWHM/jitter. More data were taken to >300 h by July 16, and the stabilities were improved to 0.7%/1.8%/1.1 ns.



# Effect of Humidity for the 2<sup>nd</sup> DP2 (s/n:12-658)

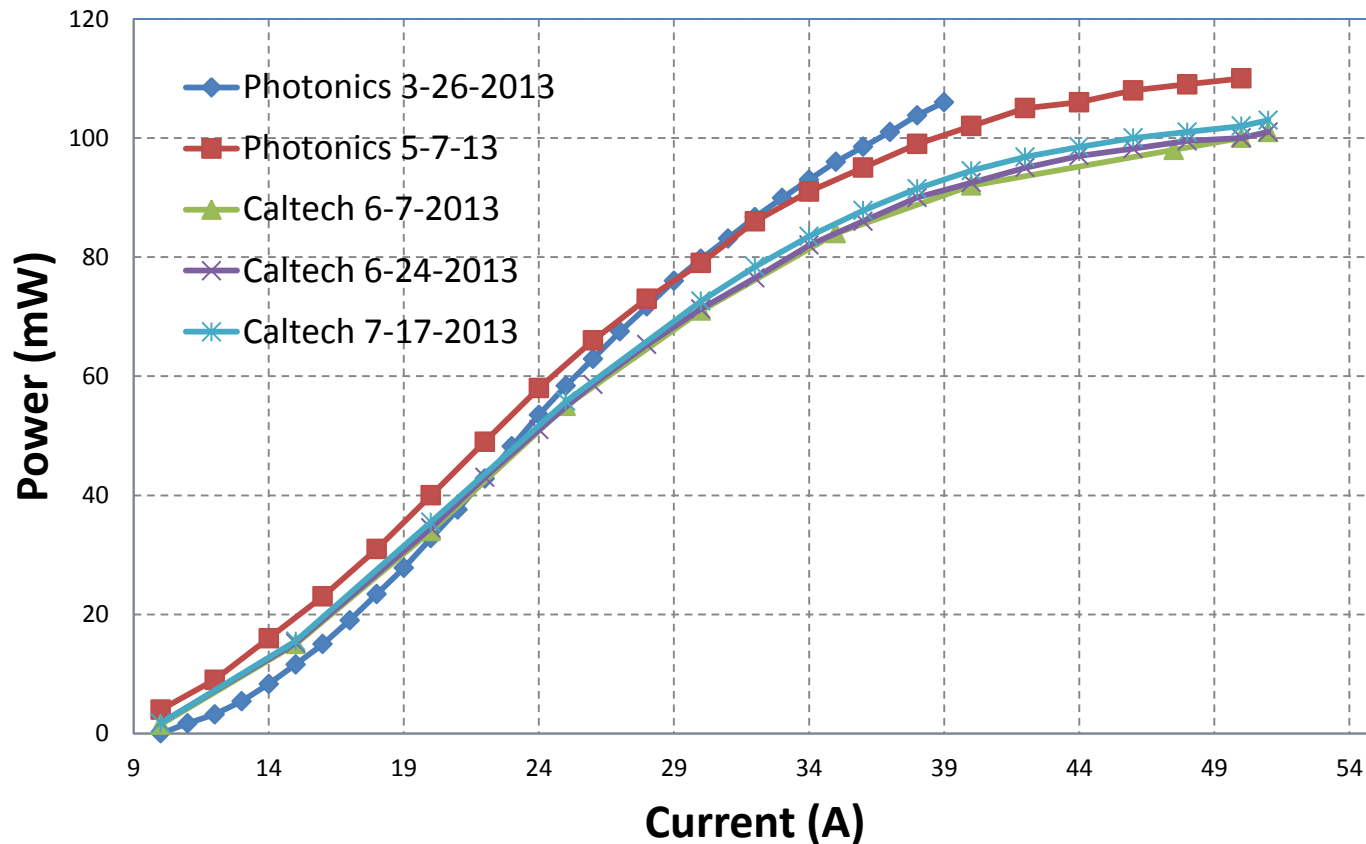
- A humidity test was carried out by removing the desiccator for about 2 h, a power increase of about 2% was observed. Dr. Pisharody of Photonics and Liyuan agree that the RH level is not the dominating factor causing the 10% degradation for the 1st DP2.
- The overnight test after reinstalling desiccator shows the power stabilized at a level slightly higher than before. A long term test (300 h) is going on.



# Summary of the 2<sup>nd</sup> DP2 Output Power

A slightly higher power was measured on July 17 after a humidity test

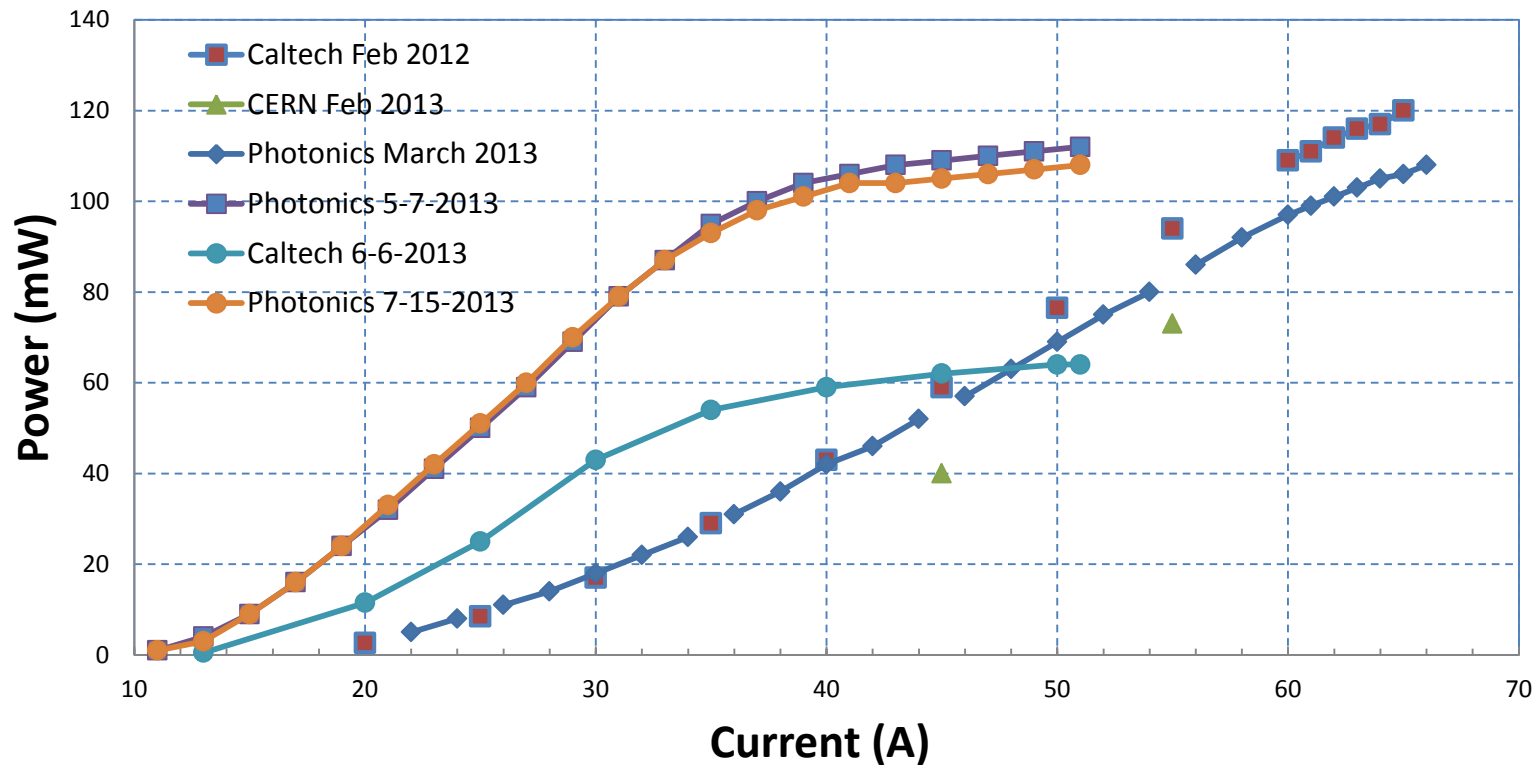
The 2nd DP2 laser (SN:12-658) output power



# Update on the 1<sup>st</sup> DP2 at Photonics

- Photonics released a test report for the 1<sup>st</sup> DP2 and asked its shipping address. As shown the summary below, the output power is more or less restored.
- Photonics claimed the RH sensor is not standard part in the laser, the RH will be maintained in the sealed laser head without desiccant.

The 1<sup>st</sup> DP2 laser (SN:11-381) output power



# Summary

- ☞ The 1<sup>st</sup> DP2 laser at Photonics is ready to be shipped to CERN. Since the RH sensor is not a standard part of the DP2 laser a quotation was issued by Photonics at \$3,700 which covers RH sensors for both DP2 lasers and the shipping cost for the 2<sup>nd</sup> DP2 between Caltech and Photonics for the sensor installation.
- ☞ The RH test on the 2<sup>nd</sup> DP2 at Caltech shows that the RH can not explain the 10% difference between the measurements at Photonics and Caltech. A further investigation would help to clarify this issue, e.g. cross-calibration for two laser power meters used at Photonics and Caltech.
- ☞
- ☞ A long term test is continued for the 2<sup>nd</sup> DP2, and will be terminated when the 1<sup>st</sup> DP2 is on the way to CERN from Photonics since the monitoring box is needed for commission.